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UNITED STATES OF AMERICA.









THE LATEST EDITION

OF THE

# MINING LAWS

FROM THE

REVISED STATUTES OF THE UNITED STATES,  
ACTS OF CONGRESS AMENDATORY  
THERETO AND LAWS OF THE  
LEGISLATURE OF THE

STATE OF COLORADO,

TOGETHER WITH

RULES GOVERNING PROSPECTING AND MINING  
ON STATE LANDS,  
GLOSSARY OF MINING TERMS,  
AND  
TABLE OF MINERAL CONSTITUENTS.

COMPILED BY W. H. MONTGOMERY.

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1633 CHAMPA STREET, DENVER, COLO.

C. E. HAGAR,  
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W. H. MONTGOMERY,  
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# HAGAR & MONTGOMERY,

PUBLISHERS OF

Official Map of the Cripple Creek and West Creek Gold Belt.  
From Records of U. S. Land Offices.

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# MINING LAWS.

Note—The rules and regulations adopted by the prospectors and miners of any district, when not in conflict with the laws of the United States, or any State thereof, are recognized by the different courts as valid, and the United States statutes recognizes their validity by reference in the text of the fundamental law governing mining.

The full and complete laws as passed by the Legislature of the State of Colorado, from which this condensed compilation is made, will be found as follows: General Statutes, 1883, pp. 718 to 729 inclusive; general section 2137, p. 663; page 276, Session Laws 1885; pages 340-343, Session Laws 1887; pages 248, 261, 460, 461, 183, 184, 185, 273, 274, 275, 276, 254 to 259, Session Laws of 1889; pages 113, 261, Session Laws 1891, and page 349, Session Laws of 1893. The Revised Statutes of the United States, title XXXII., chapter 6, edition of 1878, and the acts of Congress amendatory thereto, are used in addition, as indicated by reference.

## Mineral Land Reserved.

In all cases lands valuable for minerals shall be reserved from sale, except as otherwise expressly directed by law. (Rev. Stat. U. S., Sec. 2318.)

## Public Lands Open to Prospectors.

All valuable mineral deposits in lands belonging to the United States, both surveyed and unsurveyed, are hereby declared to be free and open to exploration and purchase, and the lands in which they are found, to occupation and purchase by citizens of the United States and those who have declared their intention to become such, under regulations prescribed by law, and according to the local customs or rules of miners in the several mining districts, so far as the same are applicable and not inconsistent with the laws of the United States. (Rev. Stat. U. S., Sec. 2319.)

## Reservations Open for Mining.

Be it enacted by the Senate and House of Representatives of the United States of America, in Congress assembled, that the forest reservations in the State of Colorado, known as the Pike's peak forest reserve, the Plum creek forest reserve, and the South Platte forest reserve, established by executive proclamation dated, respectively, March 18, 1892, June 23, 1892, and December 9, 1892, in the State of Colorado, in accordance with section 24 of the act of March 3, 1891, from and after the passage of this act, shall be open to the location of mining claims thereon for gold, silver and cinnabar, and that title to such mining claims may be acquired in the same manner as it may be acquired to mining claims upon the other mineral lands of the United States for such purposes; provided, that all locations of mining claims heretofore made in good faith within said reservations, and which have been held and worked in the same manner as mining claims are held and worked under existing law upon the public domain, are validated by this act.

Section 2. That owners of valid mining locations made and held in good faith under the terms of this act, shall be, and are hereby, authorized and permitted to fell and remove from such mining claims any timber growing thereon, for actual mining purposes in connection with the particular claim from which the timber is felled or removed, but no other timber shall be felled or removed from any other portions of said reservations by private parties for any purpose whatever. (Act of Congress, approved by the President, February 20, 1896.)

#### **Laws of Mining Districts—Record.**

A copy of all the records, laws and proceedings of each mining district, so far as they relate to lode claims, shall be filed in the office of the county clerk of the county in which the district is situated, within the boundaries of the district attached to the same, which shall be taken as evidence in any court having jurisdiction in the matters concerned in such record or proceeding; and all such records of deeds and conveyances, laws and proceedings of any mining district heretofore filed in the clerk's office of the proper county and transcripts thereof duly certified, whether such records relate to gulch (placer) claims, lode claims, building lots or other real estate, shall have the like effect as evidence. (Sec. 2396, Gen. Stat. 1883. See Rev. Stat. U. S., Sec. 2324.)

#### **Length of Lode Claim.**

The length of any lode claim hereafter located may equal but not exceed fifteen hundred feet along the vein. (Sec. 2397, Gen. Stat. 1883. Rev. Stat. U. S., Sec. 2320.)

#### **Width of Lode Claim.**

The width of lode claims hereafter located in Gilpin, Clear Creek, Boulder and Summit counties, shall be seventy-five feet on each side of the centre of the vein or crevice; and in all other counties the width of the same shall be one hundred and fifty feet on each side of the centre of the vein or crevice. (Sec. 2398, Gen. Stat. 1883. Practically same provisions expressed in Sec. 2320, Rev. Stat. U. S.)

#### **Discovery—Recording—Conditions.**

The discoverer of a lode shall, within three months from the date of discovery, record his claim in the office of the recorder of the county in which such lode is situated, by a location certificate, which shall contain: 1. The name of the lode. 2. The name of the locator. 3. The date of location. 4. The number of feet in length claimed on each side of the centre of the discovery shaft. 5. The general course of the lode as near as may be. (Rev. Stat. U. S., Sec. 2324. Gen. Stat. Colo., Sec. 2399.)

#### **Lode Claim—How Located.**

Before filing such location certificate the discoverer shall locate his claim by: 1. Sinking a discovery shaft upon the lode to the depth of at least ten feet from the lowest part of the rim of such shaft at the surface, or deeper, if necessary to show a well-defined crevice. 2. By posting at the point of discovery on the surface a plain sign or notice, containing the name of the lode, the name of the locator and the date of discovery. 3. By marking the surface boundaries of the claim. (Sec. 2401, Gen. Stat. 1883. Rev. Stat. U. S., Sec. 2324.)

### **What Location Includes.**

The location or location certificate of any lode claim shall be construed to include all surface ground within the surface lines thereof, and all lodes and ledges throughout their entire depth, the top or apex of which lie inside of such lines extended downward vertically, with such parts of all lodes or ledges as continue by dip beyond the side lines of the claim, but shall not include any portion of such lodes or ledges beyond the end lines of the claim or the end lines continued, whether by dip or otherwise, or beyond the side lines in any other manner than by the dip of the lode. (Sec. 2405, Gen. Stat. 1883.)

### **Surface Boundaries—How Marked.**

Such surface boundaries shall be marked by six substantial posts hewed or marked on the side or sides which are in toward the claim, and sunk in the ground, to-wit: One at each corner and one at the centre of each side line. Where it is practically impossible, on account of bed rock, to sink such posts, they may be placed in a pile of stones, and where, in marking the surface boundaries of a claim, any one or more of such posts shall fall by right upon precipitous ground, where the proper placing of it is impracticable or dangerous to life or limb, it shall be legal and valid to place any such post at the nearest practicable point, suitably marked to designate the proper place. (Sec. 2402, Gen. Stat. 1883.) (Note—A bill is now before Congress which provides that the side lines of all claims shall be distinctly marked by posts 100 feet apart. January 20, 1896.—Ed.)

### **Description to Designate Location.**

The description of vein or lode claims, upon surveyed lands, shall designate the location of the claim with reference to the lines of the public surveys, but need not conform therewith; but where a patent shall be issued for claims upon unsurveyed lands, the surveyor-general, in extending the surveys, shall adjust the same to the boundaries of such patented claim, according to the plat or escription thereof, but so as in no case to interfere with or change the location of any such patented claim. (Rev. stat. U. S., Sec. 2327.)

### **Certificate for Each Location.**

No location certificate shall claim more than one location, whether the location be made by one or several locators, and if it purport to claim more than one location shall be absolutely void, except as to the first location herein described, and if they are described together, or so that it cannot be told which location is first described, the certificate shall be void as to all. (Sec. 2412, Gen. Stat. 1883.)

### **Sixty Days to Sink Shaft.**

The discoverer shall have sixty days from the time of uncovering or disclosing a lode to sink a discovery shaft thereon. (Sec. 2404, Gen. Stat. 1883.)

### **Adit or Crosscut Equivalent to Shaft.**

Any open cut, crosscut or tunnel which shall cut a lode at the depth of ten feet below the surface shall hold such lode, the same as if a discovery shaft were sunk thereon, or an adit of at least ten feet in along the lode from the point where the lode may be in any manner discovered, shall be equivalent to a discovery shaft. (Sec. 2403, Gen. Stat. 1883.)

## **Assessment Work.**

\* \* \* On each claim located after the 10th day of May, 1872, and until a patent has been issued therefor, not less than one hundred dollars' worth of labor shall be performed or improvements made during each year. \* \* \* (Rev. Stat. U. S., Sec. 2324.)

## **Time for Performance of Labor.**

That the period within which the work required to be done annually on all unpatented mineral claims shall commence on the first day of January succeeding the date of location of such claim, and this section shall apply to all claims located since the 10th day of May, A. D. 1872. (Act of Congress, January 22, 1880, Sec. 2.)

## **Affidavit of Performance of Labor.**

Within six months after any set time or annual period allowed for the performance of labor or making improvements upon any lode or placer claim, the person on whose behalf such outlay was made, or some person for him, may make and record in the office of the recorder of the county wherein such claim is situate, an affidavit \* \* \* and such affidavit, when so recorded, shall be prima facie evidence of the performance of such labor or the making of such improvements. (Sec. 2410. Gen. Stat. 1883, as amended March 31, 1887.)

## **Forfeiture to Co-Owners—Delinquency.**

\* \* \* On each claim located after the 10th day of May, 1872, and until a patent has been issued therefor, not less than \$100 worth of labor shall be performed or improvements made during each year. On all claims located prior to the 10th day of May, 1872, ten dollars' worth of labor shall be performed or improvements made by the tenth day of June, 1874, and each year thereafter, for each one hundred feet in length along the vein, until a patent has been issued therefor, but where such claims are held in common, such expenditure may be made upon any one claim, and upon a failure to comply with these conditions, the claim or mine upon which such failure occurred shall be open to relocation, in the same manner as if no location of the same had ever been made; provided, that the original locators, their heirs, assigns or legal representatives, have not resumed work upon the claim after failure and before such location. Upon the failure of any one of several co-owners to contribute his proportion of the expenditures required hereby, the co-owners who have performed the labor or made the improvements may, at the expiration of the year, to-wit: the first of August, 1879, for the locations heretofore made, and one year from the date of locations hereafter made, give such delinquent co-owner personal notice in writing, or if he be a non-resident of the State, a notice by publication in the newspaper published nearest the claim, for at least once a week for ninety days, and mailing him a copy of such newspaper, if his address be known, and if, at the expiration of ninety days after such notice in writing, or after the first publication of such notice, such delinquent should fail or refuse to contribute his proportion of the expenditure required by this action, his interest in the claim shall become the property of his co-owners who have made the required expenditures. Rev. Stat. U. S., Sec. 2324.) \*Amended and approved June 6, 1874, to extend time to Jan. 1, 1875.

### **Re-Location of Abandoned Claims.**

The relocation of abandoned lode claims shall be by sinking a new discovery shaft and fixing new boundaries in the same manner as if it were the location of a new claim; or the relocator may sink the original discovery shaft ten feet deeper than it was at the time of abandonment, and erect new or adopt the old boundaries, renewing the posts if removed or destroyed. In either case a new location stake shall be erected. In any case, whether the whole or part of an abandoned claim is taken, the location certificate may state that the whole or any part of the new location is located as abandoned property. (Sec. 2411, Gen. Stat. 1883.)

### **Defective Location—How Remedied.**

If, at any time, the locator of any mining claim heretofore or hereafter located, or his assigns, shall apprehend that his original certificate was defective, erroneous, or that the requirements of the law had not been complied with before filing, or shall be desirous of changing his surface boundaries, or of taking in any part of an overlapping claim which has been abandoned, or in case the original certificate was made prior to the passage of this law, and he shall be desirous of securing the benefits of this act, such locator, or his assigns, may file an additional certificate, subject to the provisions of this act; provided, that such relocation does not interfere with the existing rights of others at the time of such relocation, and no such relocation or other record thereof shall preclude the claimant or claimants from proving any such title or titles as he or they may have held under previous location. (Sec. 2409, Gen. Stat. 1883.)

### **When Location Certificate Void.**

Any location certificate of a lode claim which shall not contain the name of the lode, the name of the locator, the date of location, the number of lineal feet claimed on each side of the discovery shaft, the general course of the lode, and such description as shall identify the claim with reasonable certainty, shall be void. (Sec. 2400, Gen. Stat. 1883.)

### **End Lines Absolute.**

If the top or apex of a lode in its longitudinal course extends beyond the exterior lines of the claim at any point on the surface, or as extended vertically downward, such lode may not be followed in its longitudinal course beyond the point where it is intersected by the exterior lines. (Sec. 2406, Gen. Stat. 1883.)

### **Apex, Side and End Lines.**

The locators of all mining locations heretofore made, or which shall hereafter be made, on any mineral vein, lode or ledge, situated on the public domain, their heirs or assigns, where no adverse claim exists, on the tenth day of May, 1872, so long as they comply with the laws of the United States, and with State, Territorial and local regulations not in conflict with the laws of the United States governing their possessory title, shall have the exclusive right of possession and enjoyment of all the surface included within the lines of their locations, and of all veins, lodes and ledges throughout their entire depth, the top or apex of which lies inside of such surface lines extended downward vertically, although such veins, lodes or ledges may so far depart from a perpendicular in their course downward as to extend outside the vertical side

lines of such surface locations; but their right of possession to such outside parts of such veins or ledges shall be confined to such portions thereof as lie between vertical planes drawn downward, as above described, through the end lines of their location, so continued in their own direction that such planes will intersect such exterior parts of such veins or ledges; and nothing in this section shall authorize the locator or possessor of a vein or lode which extends in its downward course beyond the vertical lines of his claim to enter upon the surface of a claim owned or possessed by another. (Rev. Stat. U. S., Sec. 2322.)

#### **First Discovery Valid.**

Where two crevices are discovered at a distance from each other, and known by different names, and it shall appear that the two are one and the same lode, the persons having recorded on the first discovered lode shall be the legal owners. (Sec. 2392, Gen. Stat. 1883.)

#### **Intersecting Veins—Rights.**

Where two or more veins intersect or cross each other, priority of title shall govern, and such prior location shall be entitled to all ore or mineral contained within the space of intersection; but the subsequent location shall have the right of way through the space of intersection, for the purposes of the convenient working of the mine; and, where two or more veins unite, the oldest or prior location shall take the vein below the point of union, including all the space of intersection. (Rev. Stat. U. S., Sec. 2336.)

#### **Prior Record Determines Rights.**

Where it shall appear that one lode crosses, runs into, or unites with any other lode, the priority of record shall determine the rights of claimants. (See Sec. 2391, Gen. Stat. 1883.)

#### **Right of Way for Hauling Quartz.**

Every miner shall have the right of way across any and all claims for the purpose of hauling quartz from his claim. (Sec. 2394, Gen. Stat. 1883.)

#### **Right of Way for Water.**

Whenever any person or persons are engaged in bringing water into any portion of the mines, they shall have the right of way secured to them, and may pass over any claim, road, ditch or other structure; provided, the water be guarded so as not to interfere with prior rights. (Sec. 2387, Gen. Stat. 1883. See Rev. Stat. U. S., Sec. 2339.)

#### **Right of Way for Ditch or Flume.**

All mining claims now located or which may hereafter be located, shall be subject to the right of way of any ditch or flume for mining purposes, or of any tramway or pack trail, whether now in use or which may be hereafter laid out across any such location; provided always, that such right of way shall not be exercised against any location duly made and recorded and not abandoned prior to the establishment of the ditch, flume, tramway or pack trail, without consent of the owner, except by condemnation, as in case of land taken for public highways. Parol consent to the location of any such easement, accompanied by the completion of the same over the claim, shall be sufficient without writings; and pro-

vided, further, that such ditch or flume shall be so constructed that the water from such ditch or flume shall not injure vested rights by flooding or otherwise. (Sec. 2407, Gen. Stat. 1883. See Rev. Stat. U. S., Sec. 2339.)

#### **Mining Under Surface—Security.**

When the right to mine is in any case separate from the ownership or right of occupancy to the surface, the owner or rightful occupant of the surface may demand satisfactory security from the miner, and if it be refused, may enjoin such miner from working until such security is given. The order for injunction shall fix the amount of bond. (Sec. 2408, Gen. Stat. 1883.)

#### **Mining Under Buildings—Security.**

No person shall have the right to mine under any building or other improvement unless he shall first secure the parties owning the same against all damages, except by priority of right. (Sec. 2388, Gen. Stat. 1883.)

#### **Washing Down Tailings—Flooding.**

In no case shall any person or persons be allowed to flood the property of another person with water, or wash down the tailings of his or their sluice upon the claim or property of other persons, but it shall be the duty of every miner to take care of his own tailings, upon his own property, or become responsible for all damages that may arise therefrom. (Sec. 2393, Gen. Stat. 1883.)

#### **Ore Wrongfully Mined—Recovery.**

In trials for the recovery of the value of ore or mineral wrongfully mined and extracted, if plaintiff shows himself entitled to recover, provided he had the rightful possession of the ground from which the ore was taken at the time the action was brought or tried, the fact defendant may have been in possession, either actual or constructive, when the case was tried, such fact shall not deprive plaintiff from recovering damages for the value of the ore or mineral mined and extracted according to the rules of law pertaining to the trials of actions of that character. But for the purpose of the action plaintiff shall be deemed and held to be in possession of all the ground, drifts, stopes, openings and premises from which the ore was taken, although he may not be able to reach such ground from his own openings and workings. The rule of law that plaintiff can recover nominal or six cents damages for the first entry, and then wait until he obtains actual possession of the ground from which the ore was taken, and then bring another action for the value of the ore or mineral so mined and taken, shall not be observed nor applied to defeat, in the first action, the recovery of the value of the ore or mineral so wrongfully mined or taken. (Session Laws 1893, page 349.)

#### **Removing Ore—Felony—Penalty.**

If any person, lessee, licensee or employe in or about any mine in this State, shall break and sever, with intent to steal the ore or mineral from any mine, lode, ledge or deposit in this State, or shall take, remove or conceal the ore or mineral from any mine, lode, ledge or deposit, with intent to defraud the owner or owners, lessee or licensee of any such mine, lode, ledge or deposit, such offender shall be deemed guilty of felony, and on conviction shall be punished as for grand larceny. (Sec. 2513, Gen. Stat. 1883.)

**Unlawful Purchase of Ore—Penalty.**

Any person, association or corporation, or the agent of any person, association or corporation, who shall knowingly purchase or contract to purchase, or shall make any payment for or on account of any ore which shall have been taken from any mine or claim, by persons who have taken or may be holding possession of any such mine or claim, contrary to any penal law now in force, or which may be hereafter enacted, shall be considered as an accessory after the fact to the unlawful holding or taking of such mine or claim, and upon conviction shall be subjected to the same punishment to which the principals may be liable. (Sec. 2510, Gen. Stat. 1883.)

**Removing Location Marks—Penalty.**

That if any person or persons shall wilfully and maliciously deface, remove, pull down, injure or destroy any location stake, side-post, corner-post, landmark, or monument, or any other legal land boundary monument in this State, designating, or intending to designate the location, boundary or name of any mining claim, lode or vein of mineral, or the name of the discoverer; or date of discovery thereof, the person or persons so offending shall be guilty of a misdemeanor and on conviction thereof shall be fined not more than one thousand dollars, or imprisoned not more than one year, at the discretion of the court; provided, that this act shall not apply to abandoned property. (Sec. 910, Gen. Stat. 1883.)

**Destruction of Fences, Etc.—Misdemeanor.**

That if any person, or persons, shall unlawfully cut down, break down, level, demolish or destroy, remove or carry away, any fence erected around, or covering, erected or placed over any shaft, pit or hole upon any mining claim, ground, premises, or upon the public lands in the State of Colorado, or remove the timber from any mining shaft, incline, or tunnel, the person, or persons so offending shall be guilty of a misdemeanor, and, on conviction thereof, shall be fined in a sum not less than fifty dollars, nor more than one thousand dollars, or imprisoned for not less than thirty days, nor more than one year, or by both fine and imprisonment, in the discretion of the court. (Session Laws, 1885, p. 276. In the Session Laws of 1889, pp. 460-461, mill sites are included, and a fine of not less than ten dollars nor more than five hundred is imposed for removing timber of any description or any cabin or habitation.)

**Entering by Force—Killing—Murder.**

If any person or persons shall associate and agree to enter, or attempt to enter, by force of numbers, and the terror such number is calculated to inspire, or by force and violence, or by threats of violence, against any person or persons in the actual possession of any lode, gulch or placer claim, upon or into such lode, gulch or placer claim, and upon such entry or attempted entry, any person or persons shall be killed, said persons, and all and each of them so entering, or attempting to enter, shall be deemed guilty of murder in the first degree, and punished accordingly. Upon the trials of such cases, any person or parties cognizant of such entry, or attempted entry, who shall either be present, aiding and assisting, or shall by promise of money, property, influence, assistance, or other thing of value, in anywise encourage such entry, or attempted entry, shall be deemed a principal in the commission of said offense. (Sec. 2415, Gen. Stat. 1883.)

### **Seizure by Force—Penalty.**

In all cases when two or more persons shall associate themselves together for the purpose of obtaining the possession of any lode, gulch or placer claim, then in the actual possession of another, by force and violence, or threats of violence, or by stealth, and shall proceed to carry out such purpose by making threats against the party or parties in possession, or who shall enter upon such lode or mining claim for the purpose aforesaid, or who shall enter upon or into any lode, gulch, placer claim, quartz mill or other mining property, or not being upon such property, but within hearing of the same, shall make any threats, or make use of any language, signs or gestures calculated to intimidate any person or persons at work on said property from continuing to work thereon or therein, or to intimidate others from engaging to work thereon or therein, every such person so offending shall, on conviction thereof, be fined in a sum not to exceed two hundred and fifty dollars, and be imprisoned in the county jail not less than thirty days, nor more than six months, such fine to be discharged either by payment or by confinement in said jail until such fine is discharged at the rate of two dollars and fifty cents per day. On trials under this section, proof of a common purpose of two or more persons to obtain possession of property as aforesaid, or to intimidate laborers as above set forth, accompanied or followed by any of the acts above specified, by any of them, shall be sufficient evidence to convict any one committing such acts, although the parties may not be associated together at the time of committing the same. (Sec. 2414, Gen. Stat. 1883.)

### **Tunnel Claim—Recording.**

If any person or persons shall locate a tunnel claim for the purpose of discovery, he shall record the same, specifying the place of commencement and termination thereof, with the names of the parties interested therein. (Sec. 2389, Gen. Stat. 1883.)

### **Dimensions of Tunnel Claim.**

Any person or persons engaged in working a tunnel, within the provisions of this chapter, shall be entitled to two hundred and fifty feet each way from said tunnel, on each lode so discovered; provided, they do not interfere with any vested rights. If it shall appear that claims have been staked off and recorded prior to the record of said tunnel, on the line thereof, so that the required number of feet cannot be taken near said tunnel, they may be taken upon any part thereof where the same may be found vacant: and persons working said tunnel shall have the right of way through all lodes which may lie in its course. (Sec. 2390, Gen. Stat. 1883.)

### **Tunnel Claim—Rights of Discovery.**

Where a tunnel is run for the development of a vein or lode, or for the discovery of mines, the owners of such tunnel shall have the right of possession of all veins or lodes within three thousand feet from the face of such tunnel on the line thereof not previously known to exist, discovered in such tunnel, to the same extent as if discovered from the surface; and locations on the line of such tunnel of veins or lodes not appearing on the surface made by other parties after the commencement of the tunnel, and while the same is being prosecuted with reasonable diligence, shall be invalid; but failure to prosecute

the work on the tunnel for six months shall be considered as an abandonment of the right to all undiscovered veins on the line of such tunnel. (Rev. Stat. U. S., Sec. 2323.)

#### **Labor by Tunnel—How Considered.**

\* \* \* Where a person or company has or may run a tunnel for the purpose of developing a lode or lodes owned by said persons or company, the money so expended on said tunnel shall be taken and considered as expended on said lode or lodes, whether located prior to or since the passage of said act (act of May 10, 1872), and such person or company shall not be required to perform work on the surface of said lode or lodes in order to hold the same as required by said act. (Act of Congress, February 11, 1875, amending Sec. 2324, Rev. Stat. U. S.)

#### **Placer Claim—Location—Recording.**

The discoverer of a placer claim shall, within thirty days from the date of discovery, record his claim in the office of the recorder of the county in which said claim is situated, by a location certificate, which shall contain: 1. The name of the claim, designating it as a placer claim. 2. The name of the locator. 3. The date of location. 4. The number of acres or feet claimed. 5. A description of the claim, by such reference to natural objects or permanent monuments as shall identify the claim. Before filing such location certificate the discoverer shall locate his claim: 1. By posting upon such claim a plain sign or notice, containing the name of the claim, the name of the locator, the date of discovery, and the number of acres or feet claimed. 2. By marking the surface boundaries with substantial posts, and sunk into the ground, to-wit: One at each angle of the claim. (Sec. 2385, Gen. Stat. 1883.)

#### **Placers to Conform to Surveys.**

Claims usually called "placers," including all forms of deposits, excepting veins of quartz or other rock in place, shall be subject to entry and patent under like circumstances and conditions, and upon similar proceedings as are provided for vein or lode claims; but where the lands have been previously surveyed by the United States, the entry in its exterior limits shall conform to the legal subdivisions of the public lands. (Rev. Stat. U. S., Sec. 2329.)

#### **Placer Claims Upon Surveyed Lands.**

Where placer claims are upon surveyed lands and conform to legal subdivisions, no further survey or plat shall be required, and all placer mining claims located after the tenth day of May, 1872, shall conform as near as practicable with the United States system of public land surveys and the rectangular subdivisions of such surveys, and no such location shall include more than twenty acres for each individual claimant, but where placer claims cannot be conformed to legal subdivisions, survey and plat shall be made as on unsurveyed lands; and where, by the segregation of mineral lands in any legal subdivision, a quantity of agricultural land less than forty acres remains, such fractional portion of agricultural land may be entered by any party qualified by law, for homestead or pre-emption purposes. (Rev. Stat. U. S., Sec. 2331.)

### **Lode Claim—Included in Placer.**

Where the same person, association, or corporation is in possession of a placer claim, and also a vein or lode included within the boundaries thereof, application shall be made for a patent for the placer claim, with the statement that it includes such vein or lode; and in such case a patent shall issue for the placer claim, subject to the provisions of this chapter, including such vein or lode, upon the payment of five dollars per acre for such vein or lode claim, and twenty-five feet of surface on each side thereof. The remainder of the placer claim, or any placer claim not embracing any vein or lode claim, shall be paid for at the rate of two dollars and fifty cents per acre, together with all costs of proceedings; and where a vein or lode, such as is described in section 2320, is known to exist within the boundaries of a placer claim, an application for a patent for such placer claim, which does not include an application for the vein or lode claim, shall be construed as a conclusive declaration that the claimant of the placer claim has no right of possession of the vein or lode claim; but where the existence of a vein or lode in a placer claim is not known, a patent for the placer claim shall convey all valuable mineral and other deposits within the boundaries thereof. (Rev. Stat. U. S., Sec. 233.)

### **Adverse Claim—Proceedings.**

When an adverse claim is filed during the period of publication, it shall be upon oath of the person or persons making the same, and shall show the nature, boundaries and extent of such adverse claim, and all proceedings, except the publication of notice and making and filing the affidavit thereof, shall be stayed until the controversy shall have been settled or decided by a court of competent jurisdiction, or the adverse claim waived. It shall be the duty of the adverse claimant, within thirty days after filing his claim, to commence proceedings in a court of competent jurisdiction, to determine the question of the right of possession, and prosecute the same with reasonable diligence to final judgment; and a failure so to do shall be a waiver of his adverse claim. After such judgment shall have been rendered, the party entitled to the possession of the claim, or any portion thereof, may, without giving further notice, file a certified copy of the judgment roll with the register of the land office, together with the certificate of the surveyor-general that the requisite amount of labor has been expended or improvements made thereon, and the description required in other cases, and shall pay to the receiver five dollars per acre for his claim, together with the proper fees, whereupon the whole proceedings and the judgment roll shall be certified by the register to the commissioner of the general land office, and a patent shall issue thereon for the claim, or such portion thereof as the applicant shall appear, from the decision of the court, to rightly possess. If it appears from the decision of the court that several parties are entitled to separate and different portions of the claim, each party may pay for his portion of the claim, with the proper fees, and file the certificate and description by the surveyor-general, whereupon the register shall certify the proceedings and judgment roll to the commissioner of the general land office, as in the preceding case, and patents shall issue to the several parties according to their respective rights. Nothing herein contained shall be construed to prevent the alienation of the title conveyed by a patent for a mining claim to any person whatever. (Rev. Stat. U. S., Sec. 2326.)

## **How to Obtain Patent.**

A patent for any land claimed and located for valuable deposits may be obtained in the following manner: Any person, association or corporation authorized to locate a claim under this chapter, having claimed and located a piece of land for such purposes, who has or have complied with the terms of this chapter, may file in the proper land office, an application for a patent, under oath, showing such compliance, together with a plat and field notes of the claim or claims in common, made by or under the direction of the United States surveyor-general, showing accurately the boundaries of the claim or claims, which shall be distinctly marked by monuments on the ground, and shall post a copy of such plat, together with a notice of such application for a patent, in a conspicuous place on the land embraced in such plat previous to the filing of the application for a patent, and shall file an affidavit of at least two persons that such notice has been duly posted, and shall file a copy of the notice in such land office, and shall thereupon be entitled to a patent for the land in the manner following: The register of the land office, upon the filing of such application, plat, field notes, notices and affidavits, shall publish a notice that such application has been made, for the period of sixty days, in a newspaper to be by him designated as published nearest to such claim; and he shall also post such notice in his office for the same period. The claimant, at the time of filing this application, or at any time thereafter, within the sixty days of publication, shall file with the register a certificate of the United States surveyor-general that five hundred dollars' worth of labor has been expended or improvements made upon the claim by himself or grantors; that the plat is correct, with such further description by such reference to natural objects or permanent monuments as shall identify the claim, and furnish an accurate description, to be incorporated in the patent. At the expiration of the sixty days of publication, the claimant shall file his affidavit, showing that the plat and notice have been posted in a conspicuous place on the claim during such period of publication. If no adverse claim shall have been filed with the register and the receiver of the proper land office at the expiration of the sixty days of publication, it shall be assumed that the applicant is entitled to a patent, upon the payment to the proper officer of five dollars per acre, and that no adverse claim exists; and thereafter no objection from third parties to the issuance of a patent shall be heard, except it be shown that the applicant has failed to comply with the terms of this chapter. (Rev. Stat. U. S., Sec. 2325. The act of Congress under date of January 22, 1880, amendatory to foregoing, provides that where the claimant for a patent is not a resident of the land district wherein the claim sought to be patented is located, the application for patent and affidavit may be made by an authorized agent, where said agent is conversant with the facts to be established.—Ed.)

## **Right to Timber on Public Lands.**

That all citizens of the United States and other persons bona fide residents of the States of Colorado, or Nevada, or either of the Territories of New Mexico, Arizona, Wyoming, Dakota, Idaho or Montana, and all other mineral districts of the United States, shall be and are hereby authorized and permitted to fell and remove, for building, agricultural, mining or other domestic purposes, any timber or other trees growing or being on the public

lands, said lands being mineral, and not subject to entry under existing laws of the United States, except for mineral entry, in either of said States, Territories or districts of which such citizens or persons may be at the time bona fide residents, subject to such rules and regulations as the Secretary of the Interior may prescribe for the protection of the timber and of the undergrowth growing upon such lands, and for other purposes; provided, the provisions of this act shall not extend to railroad corporations. \* \* \* Any person or persons who shall violate the provisions of this act, or any rules and regulations in pursuance thereof made by the Secretary of the Interior, shall be deemed guilty of a misdemeanor, and upon conviction shall be fined in any sum not exceeding five hundred dollars, and to which may be added imprisonment for any term not exceeding six months. (Act of Congress, approved June 3, 1878, Rev. Stat. U. S., Chap. 20, p. 88.)

#### **Reservation of Mineral Rights From Townsites.**

Townsites entries may be made by incorporated towns and cities on the mineral lands of the United States, but no title shall be acquired by such towns or cities to any vein of gold, silver, cinnabar, copper or lead, or to any valid mining claim or possession held under existing laws. Where mineral veins are possessed within the limits of an incorporated town or city, and such possession is recognized by local authority, or by the laws of the United States, the title to town lots shall be subject to such recognized possession and the necessary use thereof; and when entry has been made or patent issued for such townsites to such incorporated town or city, the possessor of such mineral vein may enter and receive patent for such mineral vein and the surface ground appertaining thereto; provided, that no entry shall be made by such mineral vein claimant for surface ground where the owner or occupier of the surface ground shall have had possession of the same before the inception of the title of the mineral vein applicant. (Act of Congress, approved March 3, 1891, Supplementary Secs. 2386, 2392, Rev. Stat. U. S.)

#### **Taxation of Mines.**

All mines and mining property of the class heretofore exempted by the constitution of the State of Colorado, shall hereafter be assessed and taxed, and the taxes levied enforced by sale of the property taxed, in default of payment, in the same manner as is now provided by law, in the case of other classes of real estate. The number of the survey lot or the name of the lode or claim, and the name of the mining district, shall be sufficient description for purposes of taxation and assessment of mining property. All mines and mining claims and possessory rights therein, producing mineral during the year exceeding in value the sum of one thousand dollars, shall be assessed by the assessor for the purposes of taxation and revenue, as follows: The assessor shall compute and ascertain the gross proceeds, in dollars and cents, derived from the mine and mining claim, to be valued during the preceding fiscal year; such mine or mining claim shall be valued for revenue purposes at a sum not exceeding one-fifth of the sum thus ascertained, and said mine or mining claim shall be assessed and taxed accordingly; and if such gross proceeds are derived from a group of several mines or mining claims contiguous to each other, owned or held by the same person, company or corporation, then such ascer-

tained sum shall be equally divided among and pro-rated to each of such claims and they shall be valued and taxed accordingly. In case the mine or mining claim shall not be patented, or entered for a patent, but shall be assessable and taxable under this act, on account of producing gross proceeds, then, and in that case, the possession shall be the subject of the assessment, and if said mining property be sold for taxes levied, the sale for such taxes shall pass the title and right of possession to the purchaser, under the laws of Colorado. It shall be the duty of the county clerk of each county to obtain a list of all mineral survey lots, patented or entered for patent, or the name and locality of all productive possessory claims in his county, on or before the first day of May in each year. He shall be allowed by the county commissioners his outlays necessarily expended in obtaining the same. Such list shall be used by the assessor to aid in listing any claims not already listed by the owners. (Ses. Laws 1887, pp. 340-42.)

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## STATE LANDS.

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Rules adopted January, 1896, governing prospecting and mining thereon:

### **May Be Leased.**

The lands of the State may be leased for the purpose of lode mining for gold and silver and other minerals while yet unsubdivided into lots, for the same time and by leases similar to those now granted on lands already subdivided, as follows:

### **Must Be Properly Designated.**

The applicant for such lots shall, in his application, designate the lots which he desires to lease by numbers conforming to the plan already in use for subdivided mineral lands.

### **Improvements—By Whom.**

He shall also state in his application whether or not development work to the amount of \$50, consisting of a shaft, open cut, adit or tunnel has been done by any other than himself on each or any of such lots, and whether any other person is, at the date of such application, or has been within ten days prior thereto, engaged in such work, and the name and postoffice address of such person.

### **Fees Must Be Transmitted.**

All applications shall be sworn to, and any false statement shall work a forfeiture of any right the applicant may otherwise have, and no application will be received unless accompanied by a survey fee of \$10, and \$5 rental for the first six months on each lot applied for.

### **Prior Locator to Be Notified.**

If any person other than the applicant has done work or has been engaged within the time specified in doing work on any such lot, the register shall notify him by letter, addressed as stated in the application, to apply in the prescribed manner to lease said lot on the usual terms within twenty days of the date of said notice; otherwise, said lot may be leased to any party applying therefor.

**Notice By Publication.**

If the postoffice address of said party so doing or having done such work on said lot be unknown, the register shall cause to be published, at the expense of the party applying for the lot, a notice, similar in effect to that above mentioned, in some weekly paper of the county in which the land is situated for two successive insertions therein.

**Delinquency—Forfeiture.**

If the party so doing or having already done work on said lot does not, within twenty days after the date of the first publication of said notice, apply in proper form to lease said lot, it shall be leased to the party who applies therefor.

**Lease to Highest Bidder.**

In all other cases where two or more applications are received for lease on the same lot, whether the land be subdivided or not, the register shall set a day for the receiving of sealed bids on the rental for the first six months of the terms of the lease, and shall notify the parties applying of said day and the terms of the bidding. All such bids must be accompanied by cash or certified check for the survey fee, or the amount of the bid, and on opening bids the lot shall be leased to the party bidding the highest rental for the first six months.

**Board Determines Conflicting Claims.**

In all cases the board reserves the right to adjust and determine conflicting claims.

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# ALPHABETICAL LIST AND CONSTITUENTS OF PRINCIPAL MINERAL ORES.

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MINERAL NAME	COMMON NAME	COMPOSITION		LUSTRE	COLOR	STREAK*	HARD NESS†	TENACITY	SPEC. GRAV.	REMARKS
ACANTHITE.	Silver Glance	Sulphide of silver	Metallic.	Iron black....	Gray black....	2.5	Malleable	7.2	37 per cent silver when pure	
AMALGAM.	Amalgam	Silver and mercury	Metallic.	Gray....	Gray....	3.0	Brittle.	10.5-14	Silver lustre	
ARGENTITE	Silver Glance	Sulphide of silver	Metallic.	Iron black....	Gray black....	2.5	Malleable	7.2	.87 per cent silver when pure	
ANGLESITE		Sulphate of lead	Vitreous	White, gray, green	Blackish	3.0	Brittle	6.0	Fuses in candle flame	
ARSENOPYRITE	Mispickel	Arsenide of Iron	Shining.	Silver white	Grayish blk	5.5	Brittle	6.4	Crumbles when heated	
ARSENIC	Native Arsenic	Native metal	Metallic.	White to gray	Tin white...	3.5	Brittle	5.7	Massive—granular	
AZURITE	Blue Malachite	Blue carbonate of copper	Vitreous	Deep blue....	Bluish....	3.5	Brittle	3.8	Valuable if abundant	
BORNITE		sulphide of copper and iron	Metallic.	Red brown	Greenish blk	3.5	Brittle	5.0	Generally carries silver	
BROMYRITE		Bromide of silver	Vitreous	(green and yellow	Yellow....	1.5	Sectile	5.8	Associated with horn silver	
CALAMINE		Hydrous zinc silicate	Vitreous	Waxy....	Colorless...	4.5	Brittle	3.9	After heating gelatinizes, cool	
CALOMEL		Chloride of mercury	Vitreous	Adamantiu	White....	1.5	Sectile	6.5	Blackens by contact with am	
CASSITERITE		Oxide of tin	Vitreous	Brown, blk or gray	White, brown	6.5	Brittle	6.9	Heat reduces to metallic tin	
CERARGYRITE		Chloride of silver	Resinous	Gray, green or bln	Shining....	1.5	Malleable	5.4	75 per cent silver soluble in am	
CERUSSITE		Carbonate of lead	Vitreous	Wh, gray, yel, bro' w	-White....	3.5	Brittle	6.4	Crumbles when heated	
CHALCOCITE		Sulphide of copper	Metallic.	Steel gray....	Gray....	2.7	Sec. to Brit	5.7	Carries silver	
HALCOPYRITE		Sulphide of copper and iron	Metallic.	Brass yellow	Greenish blk	4.0	Sec. to Brit	4.2	Often carries silver	
CHLOANTHITE		Arsn of cobalt, nickel and iron	Metallic.	White or gray	Gray....	5.5	Brittle	7.0	Contains 2 to 35 per cent nick	
CHRYSOCOLLA		Hydrous copper silicate	Sh'g · earth	Bright blue or grn	Scarlet....	2.2	Brittle	2.4	Soda on charcoal yields cop	
CINNABAR		Sulphide of mercury	Sub-metac	Cochineal red	Orange yel.	3.0	Brittle	6.0	Occurs in shaly rock and shale	
CROCOITE		Chromate of lead	Sub-metac	Bright red....	Brownish red	3.5	Brittle	3.8	Chrome yellow paint	
CUPRITE		Oxide of copper	Metallic.	Dark red....	Gray....	3.5	Sectile	9.5	Tetraoxide is black oxide of cop	
DYSCRASITE		Antimonide of silver	Metallic.	Silver white....	Yellow white	2.5	Malleable	12-16	.78 per cent silver	
ELECTRUM		Gold and Silver	Metallic.	Yellowish white	Yellow white	2.5	Malleable	5.2	.20 to .50 per cent silver	
EMBOLITE		Chloride and bromide silver	Waxy....	Green to yellow	Greenish....	1.3	Malleable	5.2	Found with bromyrite & iod te	
EUCAIRITE		Selenide of silver and copper	Metallic.	Light gray....	Shining....	2.5	Sec. to Brit	6.2	.2 to .30 per cent silver	
FREIBURGITE		Sul of copper and antimony	Metallic.	Steel gray, ir'n blk	Gray,blk, red	7.0	Brittle	2.7	Etches glass, gr'd fine w/ ac'd	
FLUORITE		Fluoride of calcium	Vitreous	Clear green, yellow	....	....	....	....	....	
FREISELEBENITE		Sul of sil, lead and antimony	Metallic.	Light gray....	Dull gray....	2.2	Brittle	6.2		
GALENITE		Sulfide of lead	Metallic.	Lead gray....	Gray black....	2.7	Sectile	7.5		
GERSDORFFITE		Sls and sul of nickel and iron	Metallic.	Sil white or gray	Gray black.	5.5	Brittle	6.0		
GOLD		Gold	Metallic.	Gold yellow....	Gold yellow....	2.5	Malleable	16-19		
HESSITE		Telluric Silver	Metallic.	Lead gray .....	Metallic....	2.5	Sectile	8.5	Nearly always native	

IODYRITE ♦	White Pyrites	Iodide of silver.....	Waxy.....	Yellow to brown.....	Yellow.....	1.5	Malleable	5.5
LEUCOPYRITE	Arsenide of iron.....	Tin white.....	Brittle...	Black.....	5.8	Brittle...	6.8	
LINNÆITE	Sulphide of cobalt and nickel	Pale steel gray.....	Brittle...	Black.....	5.5	Brittle...	5.5	
MALACHITE	Carbonate of copper.....	Blackish gr.....	Brittle...	Black.....	3.8	Brittle...	3.8	
MARCASITE	Sulphide of iron.....	Pale green.....	Brittle...	Black.....	4.7	Brittle...	4.7	
MERCURY.	Mercury.....	Pale yellow.....	Brittle...	Gray black.....	14.0	Liquid...	14.0	
MARGYRYITE	Sul of silver and antimony.....	Tin white.....	Brittle...	Drk cher red.....	5.2	...See Amalgam	...About 35 per cent silver	
MILLERITE	Sulphide of nickel.....	Iron black.....	Brittle...	Bright.....	5.5	Brittle...	5.5	
MOLYBDENITE	Sulphide of molybdenum.....	Bronze yellow.....	Brittle...	Brigh.....	4.5	Brittle...	4.5	
N AUMANNITE	Selenide of silver and lead.....	Metallic.....	Lead gray.....	(gray, green.....	4.5	Malleable	4.5	
NICCOLITE	Arsenide of nickel.....	Metallic.....	Iron black.....	Gray, black.....	8.0	Sec. to Mal	8.0	
ORPIMENT	Sulphide of arsenic.....	Metallic.....	Pale copper red.....	Brown's red.....	7.0	Brittle...	7.0	
OBSIDIAN	Fused feldspar.....	Metallic.....	Fine yellow.....	Yellow.....	5.5	Brittle...	5.5	
PETZITE	Silver, tellurium and gold.....	Vitreous.....	(Green, brown, blk	Dark gray.....	3.5	...See Brit	3.5	
PHONOLITE	Gold and silver.....	Metallic.....	Iron black.....	Dark gray.....	2.7	Brittle...	2.7	
POLYBASITE	Sul of sil., copper and arsenic.....	Sub-vitre's	Dense greenish gr.....	Dark gray.....	8.75	Brittle...	8.75	
PROUSTITE	Sulphide of silver and arsenic.....	Metallic.....	Iron black.....	Dark gray.....	6.7	Brittle...	6.7	
PYRARGYRITE	Sulphide of silver & antimony.....	Vitreous.....	Cochineal red.....	Black.....	6.7	Sec. to Brit	6.2	
PYRITE	Sulphide of iron.....	Metallic.....	Black red.....	Scarlet.....	5.4	...See Brit	5.4	
PYRRHOLITE	Sulphide of iron.....	Metallic.....	Brass yellow.....	Coclineal rd.....	5.8	Brittle...	5.8	
SILVER	Silver and little gold.....	Metallic.....	Brz yel to cop red	Dark red.....	4.5	Brittle...	4.5	
SPHALERITE	Blende.....	Metallic.....	Silver white.....	Silver white.....	10.5	Malleable	10.5	
STEPHANITE	Brittle Silver	Sul of silver and antimony.....	Yel. brown & blk	Yel. & brown.....	4.0	Brittle...	4.0	
STERNBERGITE	Sulphide of silver and iron.....	Metallic.....	Iron black.....	Iron black.....	6.2	Brittle...	6.2	
STIBNITE	Sulphide of antimony.....	Metallic.....	Broz, yel & brown	Black.....	4.2	Malleable	4.2	
STROMEYRITE	Sulphide of silver and copper.....	Metallic.....	Lead gray.....	Dark gray.....	4.5	Brittle...	4.5	
SALVANITE	Gold, silver and tellurium.....	Metallic.....	Steel gray.....	Gray, shining	6.2	Sec. to Mal	6.2	
TALC	Graphic tellurium.....	Metallic.....	St'igr, wh, brs yel	Gray.....	5.8	...See Brit	5.8	
TELLURIUM	Soapstone.....	Metallic.....	White, light green	White, light green	1.0	Brit to Sec	6.2	
TETRADYMITE	Tellurium.....	Metallic.....	Tin white.....	Tin white.....	6.2	...See Brit	6.2	
WILLEMETTE	Troostite.....	Metallic.....	Pale steel gray.....	Steel gray.....	7.5	Brittle...	7.5	
ZINCITE	Red zinc ore.....	Varied.....	Varied.....	Colorless.....	4.0	Brittle...	4.0	
		Brilliant.....	Bright red.....	Bromz red.....	5.5	Brittle...	5.5	

\*Streak is the mark made by rubbing or scratching the mineral over a hard, white, unglazed substance, or rubbing some of the powdered mineral on a piece of white paper with a knife blade.

†This scale is made from the following list : 1—Talc; 2—Gypsum; 3—Calcite; 4—Fluor Spar; 5—Apatite; 6—Feldspar; 7—Quartz; 8—Topaz; 9—Corundum; 10—Diamond.

## MINING TERMS.

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**Adamantine**—Any rock or ore of extreme hardness.  
**Adit**—A level, a horizontal passage from the surface into a mine.  
**Alloy**—A combination of one or more metals.  
**Altitude**—Elevation of an object above the sea level.  
**Alluvium**—Materials transported and deposited by water.  
**Aluminum**—Metallic base of clay.  
**Amalgam**—Gold or silver combined with mercury.  
**Amalgamating**—A name applied to the process of separating gold and silver from their ore by mixing them with mercury.  
**Amorphous**—Mineral substance not crystallized.  
**Apex**—The top or higher point of a vein.  
**Arastra**—A rude mill used by Mexicans for grinding ore to a powder.  
**Arborescent**—Mineral of a leaf or twig-like form.  
**Argillaceous**—Of clay-like character.  
**Assay**—A test of mineral to determine quality and quantity.  
**Assessment**—Percentage levied on the capital stock of a company, or the work required to be done annually on a mining claim.  
**Attrition**—Wearing away by rubbing.  
**Attle**—Waste Rock.  
**Auriferous**—Any rock or sand bearing gold.  
**Augite**—Composed of sand, lime and magnesia, with oxide of iron or manganese.  
**Azurite**—Blue copper ore.  
**Barium**—Metallic base or barytes.  
**Barren Contact**—A place in a contact without mineral.  
**Barayta**—Baraytes—The heaviest of all earthy matter. It is generally found in combination with sulphuric and carbonic acids, forming the sulphate and carbonate of baryta, known as heavy spar.  
**Basalt**—Is composed of augite and feld-spar, and is generally of a dull green, brown, black, or grey tint, containing frequently magnetic iron or particles of olivine.  
**Base Bullion**—One or more metals in combination with lead after smelting and cast into an ingot.  
**Bed**—A horizontal seam or deposit of ore.  
**Bed-Rock**—Rock underlying placer mines.  
**Black Jack**—Zinc blende; sulphide of zinc.  
**Blende**—An ore of zinc containing sulphur; sulphide of zinc.  
**Blind Lode**—Where there appears no out-crop to a vein.  
**Blossom Rock**—Detached ore or gangue rock indicating the presence of mineral veins.  
**Bonanza**—Fair weather; a rich mine. (Spanish.)  
**Bosses**—A rock studded with mineral, quartz, etc.  
**Boulders**—Rounded masses of rock found out of place.  
**Breast**—The face of a tunnel or drift.  
**Breasting Ore**—Ore taken from the end of a tunnel or face.  
**Breccia**—Angular rocks cemented together, presenting colors.  
**Budding**—Separating ore by washing.  
**Bullion**—Ingots of gold and silver ready for the mint.  
**Cage**—An elevator used in hoisting ore, refuse, lowering material, men, cars, etc.  
**Canon**—A narrow passage through mountains; a deep chasm.  
**Calcareous**—Anything containing lime.  
**Calcite**—Carbonate of lime crystallized; calc-spar  
**Calc**—Sinter—Stalactitic carbonate of lime.  
**Calc**—Tuff—A loose deposit of carbonate of lime; calcareous tufa.  
**Calcium**—Metallic base of lime.  
**Cap-rock**—Rock overlying the vein-stone or ore.  
**Carbon**—One of the elementary constituents of the earth. It is the basis of all varieties of mineral-coal, graphite, commonly called plumbago, or black lead, of all animal and vegetable charcoal. The diamond is crystallized carbon.  
**Carboniferous**—Formation containing coal.  
**Cheek**—The side wall of a vein.  
**Chimney**—This word is employed to designate those portions of a lode or vein which rise highest in the strata and lead down to the more regular fissure formation below.  
**Chlorides**—A combination of chlorine and silver or other metals.  
**Chlorine**—One of the elementary gases.  
**Chute**—A channel made out of boards or logs down which to slide ore, waste rock; etc.  
**Claim**—A tract of land of the United States taken up by any one for mineral, homestead, etc.  
**Cleavage**—In the tendency of crystals, rocks or ore, to split in certain definite directions, but not in others.  
**Coaster**—One who picks ore from the dumps.  
**Collar**—The top of a shaft or winze.  
**Comb**—One of the layers of a banded vein studded with crystals.  
**Compact**—A body that cannot be split.

**Concentrating Ore**—Ore may be concentrated in a variety of ways, according to its nature or composition. Usually the term concentration, is meant to apply to those using mechanical processes such as washing, settling and jiggling. Or, in the dry way, fanning by a current of air, by which lighter or barren portions are separated from the heavier or richer ones.

**Conglomerate**—Stones and pebbles cemented together.

**Contact**—A junction of two kinds of rock, such as lime and porphyry.

**Contact Vein**—A vein between two dissimilar rock masses.

**Contiguous**—In close or actual contact,

**Country**—The ground traversed by a vein.

**Country-rock**—The rock on each side of a vein.

**Crevise**—A fissure—a split or crack.

**Cribbing**—Timbers used in confining walls of a vein in place.

**Cropping Out**—When mineral or rock appears at the surface.

**Cross-cut**—A level driven across the course of a vein.

**Crucible**—A pot used for melting mineral. There are several kinds and qualities named Hessian clay, Black lead, French, Meissen and Berlin crucibles.

**Cube**—It is a body having six equal square sides, with equal angles.

**Cupel**—A small bone-ash cup used by assayers.

**Cut**—Where a mineral vein is intersected, crossed or divided.

**Cyanide**—Cyanide of potassium—Chemical process which dissolves gold and silver from pulverized ores, carried in solution and released by contact with zinc shavings. Economical and effective.

**Debris**—The refuse from mines; or it is applied to a collection of the larger fragments of rock and strata, to distinguish it from detritus, or those which are pulverized.

**Dendritical**—Silver appearing like tree branches.

**Denudation**—The uncovering of rocks by water or other agencies.

**Deposit**—The term is generally used to designate ore not confined to a lode.

**Dip**—The slope or pitch of a vein or mine.

**Diluvium**—A surface deposit of sand, pebbles, gravel, loam, etc.

**Disintegrate**—Rocks decomposed by atmospheric, aqueous, and other agencies, and reduced to sand, gravel, etc.

**Disseminated**—Where the mineral is distributed through the vein-stone.

**Dolomite**—A crystalline magnesia carbonate of lime; much of the building marble is dolomite.

**Drift**—A passage under ground from shaft to shaft, or a passage driven in search of ore; it is also a term applied by geologists to earth and rocks that have been drifted and deposited by water.

**Ductile**—A mineral that is malleable and can be drawn out into wire or sheets.

**Dump**—Is a place of deposit for ore and refuse.

**Dike**—Is a wall of rock or mineral thrown upward; an intrusion of melted matter into rents or fissures of rocks.

**Exploitation**—The working of a mine; the amount of work done.

**Face**—The end of a drift or tunnel.

**Fault**—The displacement of a stratum or vein.

**Feeder**—A small vein entering into a larger vein.

**Ferruginous**—Anything containing iron in solution or composition.

**Filament, {** } Is the name of mineral of a thread-like appearance.

**Filiform**—A crack in the earth's crust containing mineral.

**Flint**—A species of quartz, of a yellowish, bluish, or blackish grey color.

**Float**—Loose quartz, calc spar, fluor spar, heavy spar or detached mineral.

**Fluccan**—A half decomposed rock often found adjoining a vein.

**Flume**—Pipe, box or trough used in conveying water.

**Fluoride**—A combination of fluorine with a metal.

**Flux**—Substance used to promote fusion of metals or ores.

**Foot-wall**—Rock beneath a vein.

**Free-gold**—Gold easily separated from the gangue-rock, gravel or dirt.

**Gad**—A small pointed wedge.

**Galena**—Sulphide of lead.

**Gash-vein**—A vein wide at the top and closing at a short depth.

**Gneiss**—(Nice). Metamorphic rock resembling granite

**Gouge**—A clay streak found next to the walls of a fissure vein.

**Granitoid**—Resembling granite.

**Gulch**—A ravine; dry water course; a gully.

**Gulcina**—Oxide of gulcinum.

**Gulcinum**—A metal in form of a greyish black powder which assumes a dark metallic lustre by rubbing.

**Gypsum**—Sulphate of lime; when burned and ground fine is called plaster of paris; when white, fine grained and translucent it is called alabaster.

**Gypsiferous**—Partaking of the nature of gypsum; plaster of paris; sulphate of lime,

**Hanging-wall**—A layer of rock or wall overhanging a lode.

**Heading**—A vein of ore above a drift.

**Headings**—Gravel above the head of a sluice.

**Hexagonal**—A crystal having six sides and six angles.

**Horse**—A mass of rock between the branches of a vein.

**Hydrogen**—One of the elements of water; the lightest substance known.

**Hyacinth**—A red, ferruginous quartz, of a blood-red color; sometimes of a reddish orange; also brown.

**Igneous**—The igneous rocks are those rocks whose structure is attributable to heat, such as porphyry, etc.

**Incline-drift**—An incline passage-way under ground.  
**Indurated**—Any substance becoming hardened.  
**Ingot**—A mass of gold, silver or other metal cast into a mould.  
**Infiltration**—Water penetrating the interstices or cavities of a body.  
**In place**—Not having been disturbed from its original position, and not separated from the entire mineral body.  
**Iridescence**—A gleaming of colors.  
**Jig**—A machine for concentrating ore by means of water.  
**Jumping a claim**—Relocating a claim made by another in the absence of the original claimant, or by force.  
**Lagging**—The timbers over and upon the sides of a drift.  
**Laminae**—Thin sheets or scales of a mineral.  
**Lead-granulated**—Pure lead used in assaying.  
**Ledge, lode or lead**—Mineral ores and gangue confined within fissure veins.  
**Level**—A horizontal passage in a mine diverging from the shaft.  
**Lixiviation**—This term is used for all processes in which the ground ore or “pulp” is treated by chemicals in the wet way. There are many different processes, but all include treatment of the wet pulp by suitable chemicals.  
**Lode**—A belt or sheet of mineral bearing rock, having definite boundaries and clearly separated from neighboring rocks.  
**Lustre**—The gleam or polish of a mineral.  
**Magnesium**—Metallic base of magnesia.  
**Magnesia**—A soft white powder, without taste or smell; oxide of magnesium.  
**Malleable**—A metal that will flatten under the hammer.  
**Manganese**—A Metal of a whitish grey color to a dusky white, very hard and difficult to fuse.  
**Marl**—A mixture of lime and clay.  
**Massive**—In mass; having a crystalline structure.  
**Matrix**—The same as gangue or vein stone.  
**Metallic**—Like a metal in lustre and substance.  
**Metallurgy**—The science of testing, assaying or separating the metals from their ores.  
**Mill-run**—A test of the value of an ore from a large quantity.  
**Nodules**—A rounded mineral mass of irregular shape.  
**Octahedron**—A solid, with eight triangular plane faces; two four-sided pyramids base to base.  
**Opaque**—Not transmitting light.  
**Opal**—*Fire Opal*—A silicious gem of red and yellow flame colors. *Common Opal*—Has a milky appearance.  
**Out-crop**—The portion of a vein showing at the surface.  
**Oxide**—A compound of oxygen with any other single element.  
**Panning-out**—Paying well; in panning gold where considerable is found.  
**Pay-rock**—Lode mineral in which ore is found.  
**Pearl-spar**—Brown spar; a magnesian carbonate of lime colored by the oxide of lime or manganese.  
**Petering**—Giving out; failing.  
**Pitch**—A slope or dip.  
**Placer**—A deposit of mineral, particularly gold, in sand or gravel.  
**Plane**—A flat, regular surface, as of still water.  
**Plumbiferous**—Pertaining to ores carrying a percentage of lead and iron.  
**Pocket**—A rich spot in a vein or deposit.  
**Porphyry**—A rock consisting of a compact feldspathic base through which are scattered crystals of feldspar of various colors, sometimes white; the term is often applied to other rocks of compact uniform base, which contains crystals of another mineral.  
**Precipitated**—Cast or thrown down as a sediment.  
**Prospecting**—Searching for mineral veins or deposits.  
**Pudding-stone**—A coarse sandstone composed of pebbles; flints cemented together.  
**Quartz—Glassy Variety**—*Amethyst*—color purple or bluish violet.  
*Rose Quartz*—Pink colored; much fractured.  
*Citrine or Topaz*—Yellow color.  
*Cairngorm*—A yellowish crystal or false topaz.  
*Milky Quartz*—Greasy feel.  
*Leek or Green Quartz*—Colored with the silicate of iron.  
*Aventurine*—Spangled with yellow covered mica; sometimes gray, brown, or reddish brown in color.  
*Iron Colored Quartz*—Yellow, brownish yellow or red.  
**Semi-Transparent Variety**—*Chalcedony*—White, bluish and brown.  
*Chrysoprase*—Apple-green color.  
*Carnelian*—Bright red color with clear rich tint.  
*Sardonyx*—Deep brownish red.  
*Agate*—Variegated colored lines; sometime looks like moss inclosed.  
*Onyx*—Variety of colors in horizontal layers.  
*Cat's Eye*—Greyish green color,  
*Flint Hornstone*—Smoky gray, brown and even black; partly translucent.  
**Jasper, or Opaque Variety**—*Heliotrope or Bloodstone*—Contains alumina and oxide of iron.  
*Touch Stone or Lydian Stone*—Velvet black color; used to detect gold.  
*Basanite*—Black Jasper or finty slate.  
*Pseudo-Morpheus*—Imperfectly crystallized.

**Quartz—Opaque Variety—Continued.**

*Wood Jasper*—Wood mineralized by silicious petrefaction; yellowish brown.

*Hydrophane*—White; a variety of opal.

**Quartz—Porphyry**—Consists of well marked grains, bulbs or crystals; color, flesh red, reddish brown, purple, yellow, bluish slate gray and white; mica or hornblende gives dark gray, brown or greenish tints.

**Quartz—Trachyte**—It presents a glassy, enamel like or porcellaneous character under magnifying lens.

**Quartzose**—Resembles quartz in nature and characteristics.

**Re-Agents**—Chemicals employed to detect the presence of metal.

**Reducing**—The process of extracting the metal from the ore.

**Reniform**—A kidney-shaped ore.

**Reticulated**—Ore resembling net work.

**Resinous**—Resembling common resin.

**Rhyolite**—A light colored, felsitic, thinly banded rock containing small white or glassy crystals of plagioclase and leaves of biotite, with some quartz. Ashen gray, white or pale pink in color.

**Ruby—1.** *Spinelle*—Is orange, red and violet brown; consists of alumina and magnesia, with iron and chromium.

**2.** *Pyrope*—Is the silicate of magnesia and alumina, with iron as coloring matter.

**Salting a Mine**—Placing foreign ore in the crevices of a vein for the purposes of deceiving.

**Sapphire**—It is nearly pure alumina with iron as coloring matter, and next to the diamond in hardness.

**Schistose**—Rock admitting divisions into flags, slabs or slates.

**Sectile**—Easily split in one or several directions.

**Selvage**—Thin band of earthy matter between the walls and vein.

**Shaft**—A well-like excavation.

**Shale**—A fine grained sedimentary rock, having a slaty structure.

**Slag**—Waste from smelters; scum, dross, vitrified cinders, etc.

**Slimes**—Ore crushed fine in the mills or vein.

**Sluices**—Troughs through which water is run to wash out gold.

**Smelting**—The reduction of ores by fire.

**Sodium**—Metallic base of soda.

**Spars—Calc Spar**—Crystalline carbonate of lime of various shades of grey, white, green or yellow.

*Fluor Spar*—Fluoroide of lime, clear, green and yellow colors.

*Heavy Spar*—Sulphate barium, white, red, yellow, etc.

*Pearl Spar*—Magnesian carbonate of lime of pearly lustre.

*Volcanic Spar*—Fused feld spar.

**Spathose**—Having a sparry appearance.

**Stamps**—Machines for crushing ores.

**Stope**—To excavate in the form of steps.

**Stoping**—The act of excavating the ore from the roof or floor of a drift with a pick; the former is overhand stoping; the latter underhanded stoping.

**Strike**—The extension of a lode in a horizontal direction; valuable mineral development made unexpectedly.

**Streak**—Definition see Table mineral ores.

**Stulls**—A frame work to support the rubbish when stoping.

**Sump**—A hole in the bottom of a shaft or tunnel for collecting the water.

**Tailings**—The refuse left after washing or smelting ores, generally containing ores or metals not recovered.

**Talc**—A magnesian mineral of smooth surfaces, greasy feel, shining lustre, translucent and easily scratched by the finger nail.

**Tenderfoot**—A novice in the art of mining and without knowledge of prospecting for minerals.

**Tertiary**.—A late geological period.

**Test-lead**—Lead refined and granulated for assayers.

**Trachyte**—A species of lava in which feld-spar predominates; when feld-spar crystals are thickly and uniformly disseminated through the mass it is called trachyte porphyry.

**Translucent**—Transmitting light, but not clear like horn.

**Triturate**—To grind or pulverize.

**Tunnel**—A level driven across a vein.

**Tuffa-Tuff—1.** A volcanic sandstone.

**2.** A soft porous rock deposited by water, usually calcareous.

**Turquoise**—Hydrated phosphate of alumina of a bluish green.

**Vein**—An aggregation of mineral matter in rock fissure (See lode.)

**Vitreous**—Having the appearance of glass.

**Whim**—A machine for raising ore and refuse.

**Winze**—A shaft sunk from one level to another.

**High grade ore**—Whether an ore is to be classed as "*High Grade Ore*" depends upon the nature of the ore, which determines the process to be used in extraction of the mineral. For instance, an ore with 50 per cent of lead and 50 ounces of silver per ton would be classed *High Grade* as a *Smelting Ore*; but if it contained 50 ounces of *Silver and no lead*, it would be classed *Low Grade Ore*, whether at a smelting or amalgamating mill. Again, 100 ounce ore with no lead, would be called *High Grade Ore* as an amalgamating ore, and *Low Grade Ore* as a smelting ore. But generally, 40 ounces and under in any silver ore may be classed as *Low Grade*, though many smelting ores thus classed will pay handsomely if plentiful enough.

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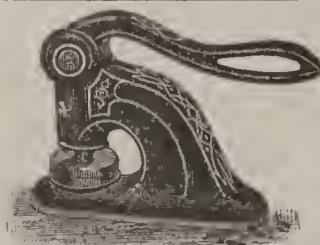
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